5.0 Otonabee River

Trent University's key defining and structural characteristic is its location along the banks of the Otonabee River. Odoonabii-ziibi, the original name of the Otonabee River, is an Anishinaabemowin description that refers to '*the river that beats like a heart*'. It is a name that embodies the life that water brings to all of Creation. The river is all but one part of a complex system of wetlands and watercourses. This hydrologic system at large bears considerable natural and cultural significance to the Campus. Trent recognizes the importance of a healthy hydrologic system as integral to ensuring a robust and resilient natural system for the Symons Campus and the landscape beyond.

The hydrologic system comprises the features and functions that support surface water and groundwater. Simplified, this includes permeable lands and features that permit or provide important focal areas for infiltration to support groundwater, features and areas that receive and are supported by groundwater (e.g., some wetlands and watercourses), and the presence and movement of surface water (e.g., overland, via headwater drainage features, watercourses). Interactions with land cover affect the hydrologic system in terms of water quantity and quality.

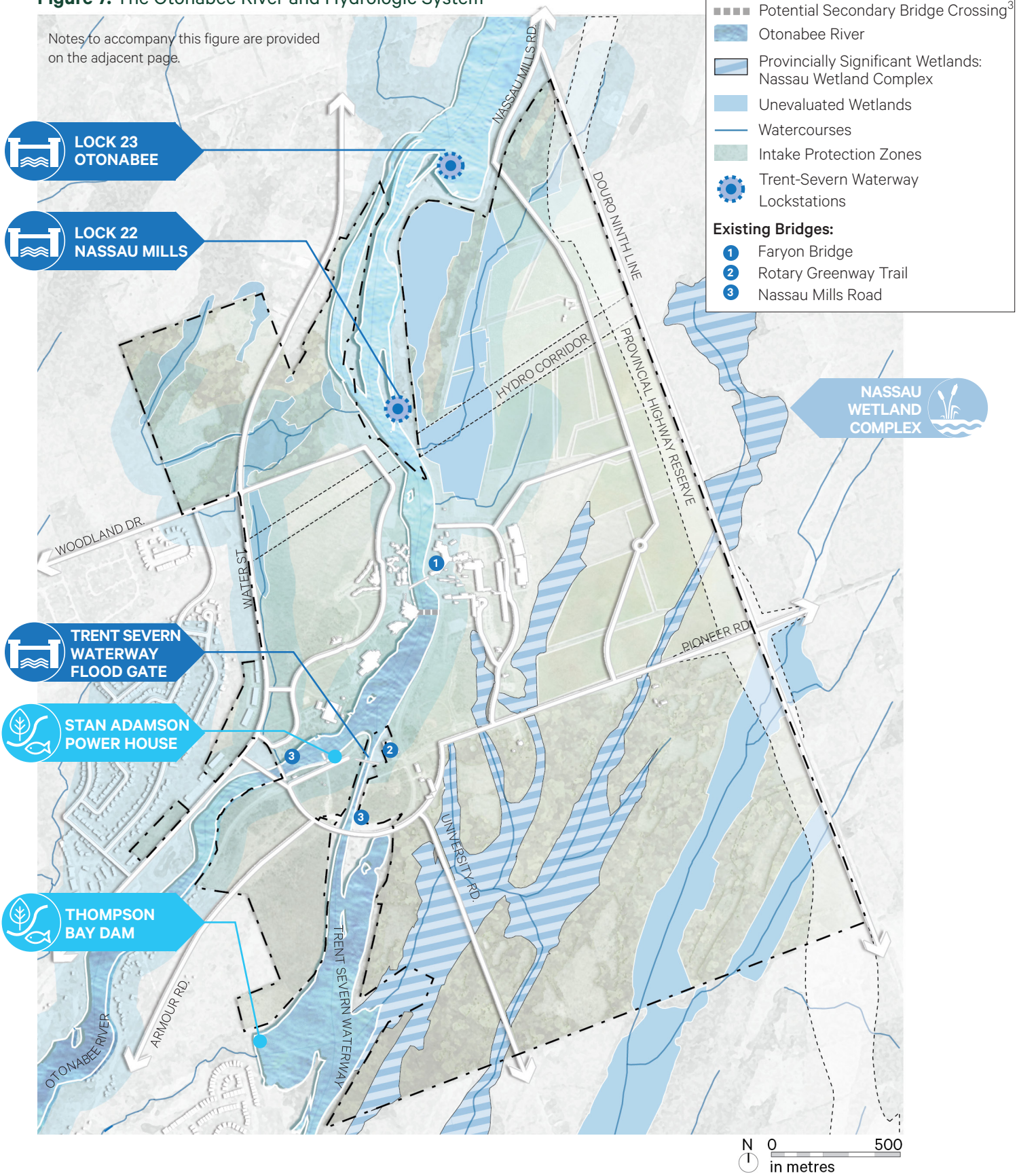
Examples of interactions include slowing water flows, allowing for infiltration (water quantity), removal of sediments and other debris in riparian areas, or changes in water temperature (water quality). In turn, the quality and quantity of water affects the biotic environment by influencing vegetation communities (e.g., soil moisture needs of plants, plant stress), and wildlife habitat both directly and indirectly. Examples of direct effects on wildlife habitat include a loss or change in the duration of open water conditions or changing soil moisture conditions leading to plant stress. Indirect effects may include limitations to wildlife food sources as a result of drought, or degraded water quality reducing success rates for egg development (e.g., salamanders).

Notes to accompany Figure 7:

1. An Environmental Impact Study and site-specific study are required for future development to determine: natural heritage feature limits, the significance and/or sensitivity of natural heritage features, setbacks and buffers from natural heritage features, and locations of roads and/or pedestrian crossings.
2. New roads and circulation routes are conceptual and require further detailed study. Future design related to public streets and infrastructure will be subject to approval by the City, and Site Plan Approval will be required for future private infrastructure, as applicable.
3. The Potential Secondary Bridge Crossing is conceptual and requires further detailed study and coordination with all relevant parties.

Figure 7: The Otonabee River and Hydrologic System

Notes to accompany this figure are provided on the adjacent page.



GOALS FOR THE HYDROLOGIC SYSTEM

LEARNING AND DISCOVERY

- Promote land-based learning opportunities to strengthen expertise in the water technology and testing sector, and promote research and innovation, research, and innovation.
- Promote the significance of water to Anishinaabe and Indigenous peoples, and the heritage of the University in its location along the banks of the Otonabee River, on the treaty and traditional territory of the Michi Saagiig Anishinaabeg. This involves integrating Indigenous placemaking elements, names, and heritage.

ENVIRONMENTAL RESILIENCE AND INTEGRITY

- Maintain and where possible enhance the integrity of the Otonabee River and associated waterbodies and watercourses to preserve and enhance the natural hydrological functions, water quality, and aquatic and terrestrial habitats.
- Support a resilient system that addresses water quality and quantity management in the hydrologic system from infiltration to support groundwater, avoid exacerbation of flood peaks, and protect wetlands and riparian areas for water quality.
- Monitor key components of the hydrologic system.
- Foster opportunities to enhance a healthy and functioning hydrologic system, through restoration and naturalization to integrate ecological services and functions, tied both to enhancing biodiversity and existing function, but also to building in future resilience to climate change.

ECONOMIC RESILIENCE, LEADERSHIP, AND INNOVATION

- Showcase the significance and distinguishing location of the University along the banks of the Otonabee River for those travelling along it.
- Seek University partnerships to advance leading research related to water consumption and quality (e.g., Trent's Water Quality Centre), and provide employment opportunities to students and graduates of the University.
- Explore new eco-tourism opportunities, promote the range of water-based activities, and invite travellers along the Trent Severn Waterway and the larger American Great Loop to visit the University campus.

SOCIAL RESILIENCE, COMMUNITY, AND INCLUSIVITY

- Promote safe links to the riverside and new social spaces in order to secure valuable connections and views to the waters. These spaces can provide tiered steps to the river for passive recreation, and spontaneous outdoor learning.
- Explore opportunities to coordinate with the City of Peterborough on the conversion of the existing Nassau Mills Road as a multi-use trail connection that improves visual and physical access to the shoreline of the Otonabee River and Trent Severn Waterway.
- Maintain opportunities to take part in recreational activities on the river, including swimming, rowing, and riverside walking and observation.

Tiered steps leading to the Otonabee River

5.1 Significance of the Otonabee River

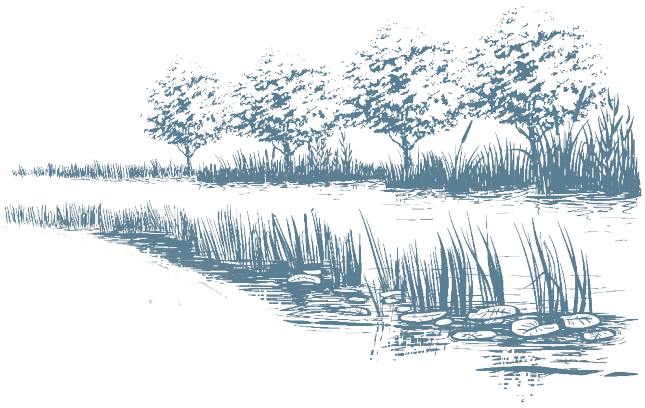
The Symons Campus setting is unique, with many of its buildings and amenities offering a direct physical and visual connection to the river. The Otonabee River is of local, regional, and national significance, and serves many functions: it is vital to the health of flora and fauna on campus; it has and continues to be a main travel route and source of food; it provides opportunities for recreation and water-based athletics; and it is identified as a significant cultural heritage feature for Trent University, the City of Peterborough, and the Michi Saagiig. First Nations speak of *time immemorial* to describe their presence on the lands and waters of their traditional territory, with evidence of populations near river mouths and on the shores of embankments in Ontario dating back to the Archaic Period (8,000 BCE - 950 BCE). The river also comprises a portion of the Trent Severn Waterway, a historic canal and series of lockstations operated by Parks Canada (an agency of Environment and Climate Change Canada) and recognized as a National Historic Site.

The following pages provide general guidelines applicable to new initiatives proposed to locate within the Symons Campus to ensure that the river continues to be a central and celebrated element of the campus, as envisioned in the original Ron Thom vision, and its hydrologic system protected and nurtured.

Odoonabii-ziibi

It is the traditional role of Anishinaabe women to speak for the water, to ensure it's protection and wellbeing for future generations. There are special ceremonies of thanksgiving, led by the women, that acknowledge the importance of water. Often these ceremonies take place on the shoreline, including on the Otonabee River.

Anishinaabe teachings and Indigenous Traditional Knowledge reinforce the importance of water to the sustenance of all life, including human kind, plant life, and all animals in Creation. Water comes in the form of the lakes and rivers, wetlands, ground water, and water that comes in the various forms of precipitation. Water also comes in the form of sea water, the sweet water from enaatig (the sugar maple), and birth water that comes before a baby is born.




Trent Lands and
Nature Areas Plan

5.2 Watershed and Ecological Function

The City of Peterborough Watershed Plan
peterborough.ca/en/city-services/our-watershed-our-blueprint-peterborough-watershed-plan.aspx

The City of Peterborough's Watershed Plan envisions "*a healthy and resilient watershed that protects, sustains and enhances our evolving communities*". The campus framework recognizes the role of the Otonabee River, Trent Severn Waterway, and associated waterbodies and watercourses in preserving and enhancing natural hydrological functions, water quality, and aquatic and terrestrial habitats.

Recognizing interdependencies between hydrology and ecology is important to maintaining the health of both systems and in building resilience to climate change.

- **Water quality** – wetlands and riparian areas provide a filtering and processing function in a watershed.
- **Water quantity control** – wetlands, permeable surfaces, and meandering watercourses reduce flood impacts by slowing water down, providing a source of water during dry periods, providing infiltration to support groundwater, avoiding exacerbation of flood peaks, and protecting wetlands and riparian areas for water quality.
- **Nutrient cycling and productivity** – important for water quality, but also as an integral function in the ecology of a watershed.
- **Fish and wildlife habitat** – the hydrologic system provides habitat for a broad range of wildlife, including fish, amphibians, reptiles, birds, mammals, and insects.
- **Vegetation communities** – soil and soil moisture are important factors in determining the types of vegetation communities and plant species present, and consequently the habitats provided for wildlife.
- **Biodiversity** – wetlands and other waterbodies are highly biodiverse and are critical to protecting biodiversity in the long term.

The Symons Campus will support a hydrologic system that effectively filters and infiltrates water into the ground, providing inputs to groundwater sources and improving water quality before it enters into the river. The resilience of this system will ensure a healthy watershed and beautiful natural places to explore, learn from, and enjoy for generations to come.

General Guidelines

CELEBRATING HERITAGE

- Explore opportunities to integrate educational signage and interpretive art that recognize the significance of the Otonabee River to the many communities that it serves.
- Showcase the presence of the University along the banks of the Otonabee River for those travelling along it.
- Acknowledge the pluralistic heritage of the University in its location along the banks of the Otonabee River, on the treaty and traditional territory of the Michi Saagiig Anishinaabeg.

CONNECTING EAST AND WEST BANKS

- The Faryon Bridge is a structure of heritage significance and should continue to function as the main pedestrian connector between the east and west banks of the campus.
- Explore opportunities to provide a secondary pedestrian crossing at a key juncture within the Symons Campus, improving access for students between the two banks and providing an opportunity for seating and observation of activities taking place on the river (as shown conceptually on Figure 9).
- Explore design interventions and technologies that seek to reduce the impact of cold winds and ice build-up as retrofit opportunities for the Faryon Bridge or design features of a new bridge.

ACCESS AND RECREATION

- Coordinate proposed building siting and heights within the Campus Core to maintain views to the Otonabee River, to the extent possible.
- Provide direct routes to viewing areas along the river's edge, including additional or enhanced trail access and seating opportunities.
- Pedestrianization of the east bank river's edge is a key priority of this Plan, with consideration to reclaim the riverfront and convert the existing Nassau Mills Road into a multi-use trail as envisioned by the original Ron Thom Master Plan. This vision is consistent with the City's goals and objectives to provide public access to the shoreline of the Otonabee River and Trent Severn Waterway (to be coordinated with the City of Peterborough).
- Maintain opportunities to take part in recreational activities on the river, including swimming, rowing, and riverside walking and observation.

WATER AS AN ACADEMIC AND RESEARCH STRENGTH

Cleantech Commons
cleantechcommons.ca

Cleantech Commons' focus is clean and green technology manifested in the companies and the products created that affect the amount of water that we consume, its many and various uses and applications, and the logical re-use of the resource time and time again.

Trent has strong expertise in the water technologies industry. Peterborough and its academic institutions have significant research capabilities in the sector (including infrastructure and academic programs) along with significant employers in the region involved in the water technology and testing sector.

Trent's Water Quality Centre is one of the world's premier facilities for research on environmental contamination of water.

Trent offers a Bachelor of Science degree in Water Sciences, within the Trent School of the Environment.

Trent holds the David Schindler Professorship in Aquatic Sciences.

Trent has been involved in long term studies with Indigenous Communities in Canada's north on protection of drinking water, through our Indigenous Environmental Studies program and our Institute for Watershed Studies, with federal funding.

River Views from Campus Buildings

Students Swimming in the Otonabee

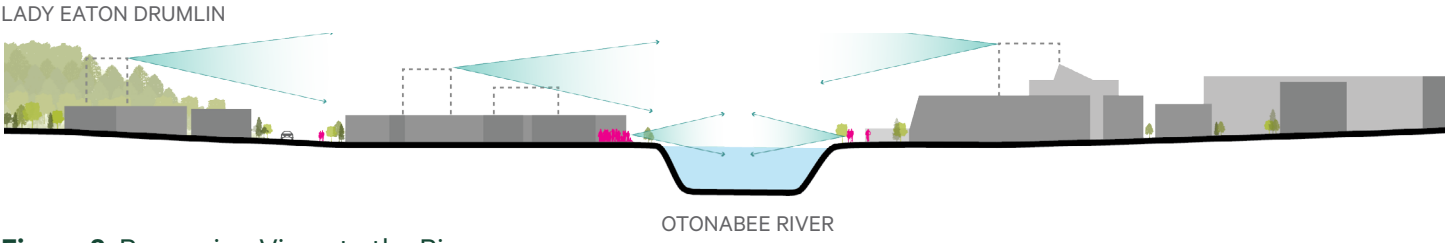


Figure 8: Preserving Views to the River

Figure 9: Enhancing Physical Connections to and Across the River

TOURISM ON THE SYMONS CAMPUS

WEB

The Great American Loop
greatloop.org/

- Promote the Symons Campus and Trent University on public pedestrian and cycling trails running alongside the Otonabee River and Trent Severn Waterway.
- Promote the river as an eco-tourism destination and raise awareness of the available natural and recreational experiences.
- Highlight and showcase the University's environmental leadership and conservation efforts utilizing signage and placemaking initiatives.
- Recognize the role of the Otonabee River to the Michi Saagiig communities and integrate Indigenous placemaking elements and signage along the river's edge, including Indigenous names and heritage.
- Explore opportunities to add designated spaces for boards to dock, inviting travellers along the Trent Severn Waterway and the larger American Great Loop to visit the University campus.

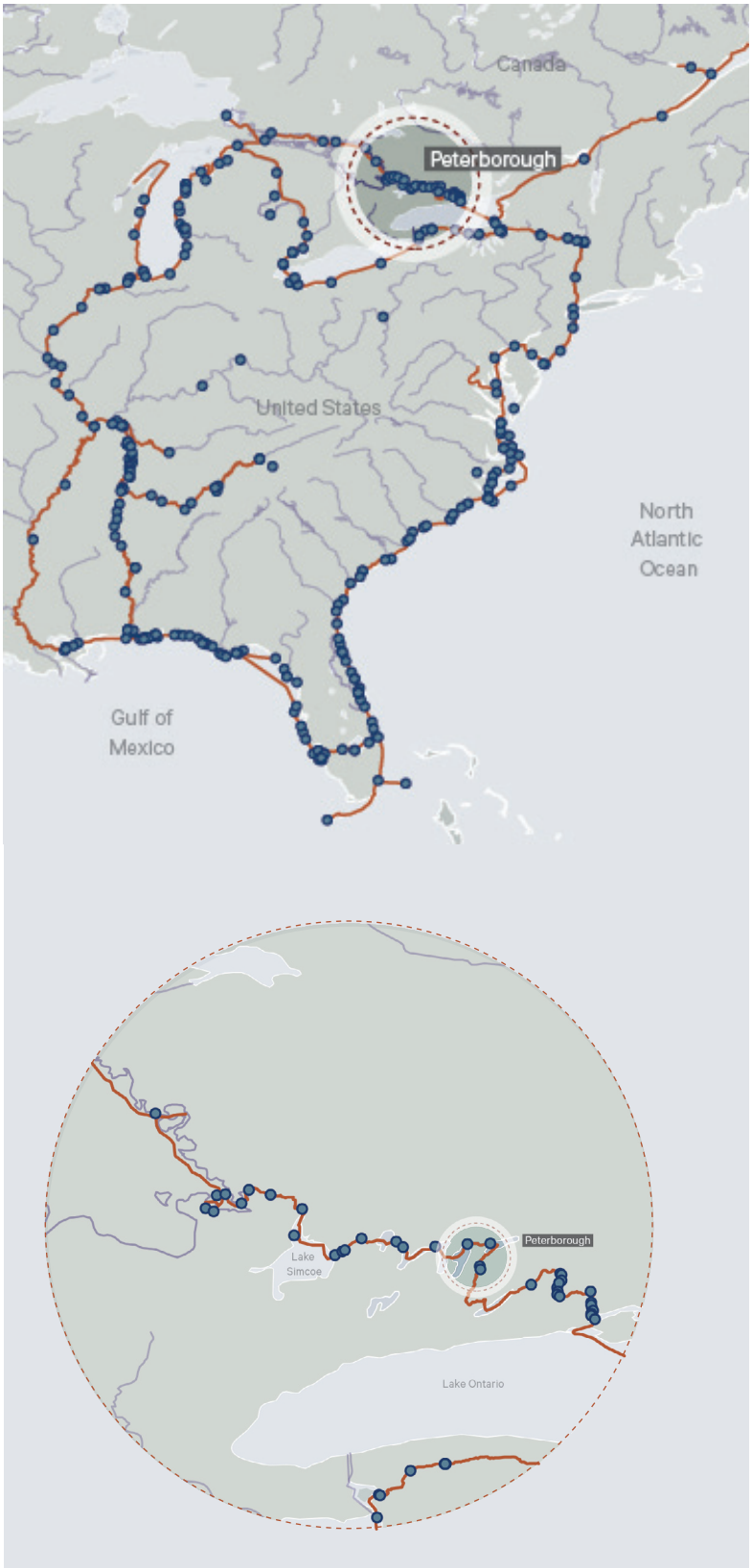


Figure 10: The Great Loop and the Trent Severn Waterway

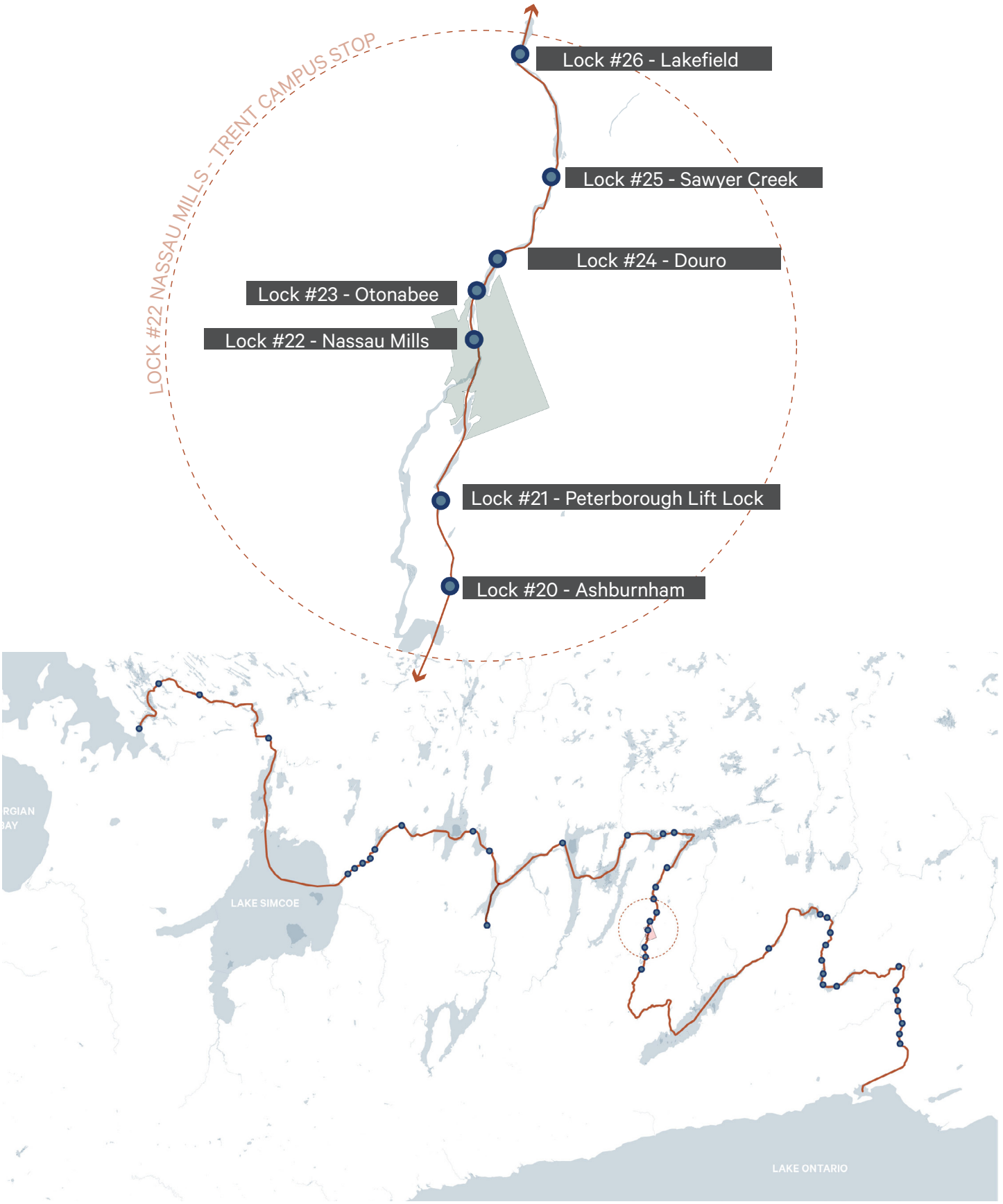


Figure 11: Tourism on the Symons Campus

DEMONSTRATION

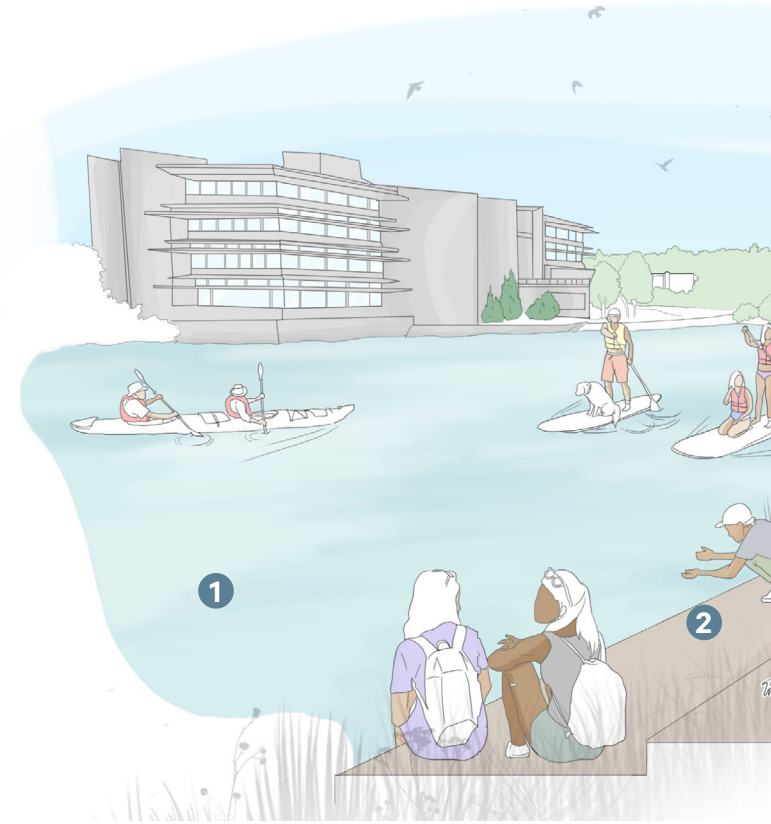
RIVER'S EDGE

The Otonabee River is a distinguishing feature of the Symons Campus identity and a major focus for leisure with a potential for tourism. The following demonstration reimagines the eastern edge of the river as a soft, pliable and programmed riverside landscape, relocating the Nassau Mills Road away from the water to improve pedestrian and cyclist safety, and open up new opportunities for resilience, biodiversity, and access. Removing fast-moving car traffic from this edge reclaims the bank as an inviting place that is accessible to everyone: locals and tourists, individuals and groups, adults and children. Riverside spaces and complete, connected paths are destinations for spontaneous learning, play, reflection, and connection to nature. Cycling paths connect to a wider network of trails in the Peterborough Region. Eco-tourism opportunities include water sports such as kayaking, canoeing, and paddleboarding.

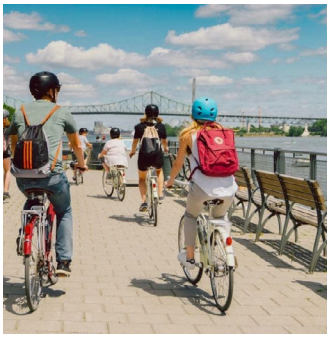
The Otonabee River's edge also forms a vital protective barrier from the wide and flowing river. The riverside landscape is restored as a resilient and functional ecosystem, integrating naturalized slope stabilization and sediment filtration strategies, restored natural riparian areas, terrestrial and aquatic habitat, and carving out spaces that can safely absorb flooding and drainage.

A River Hub where Water Meets Land

1. Consolidated multi-use hub (i.e. bikes, kayaks, boats, etc.).
2. Places for public access and enjoyment.
3. Safe links across the river to connect to existing amenities and green spaces on the embankment.
4. Prioritized pedestrian and cyclist network.
5. Naturalized river's edge integrating aquatic and terrestrial habitat restoration efforts.
6. Comprehensive signage and mapping.



1 Consolidated multi-use hub



Source: Local Food Tours

4 Prioritized pedestrian and cyclist network

Source: David Lloyd, SWA

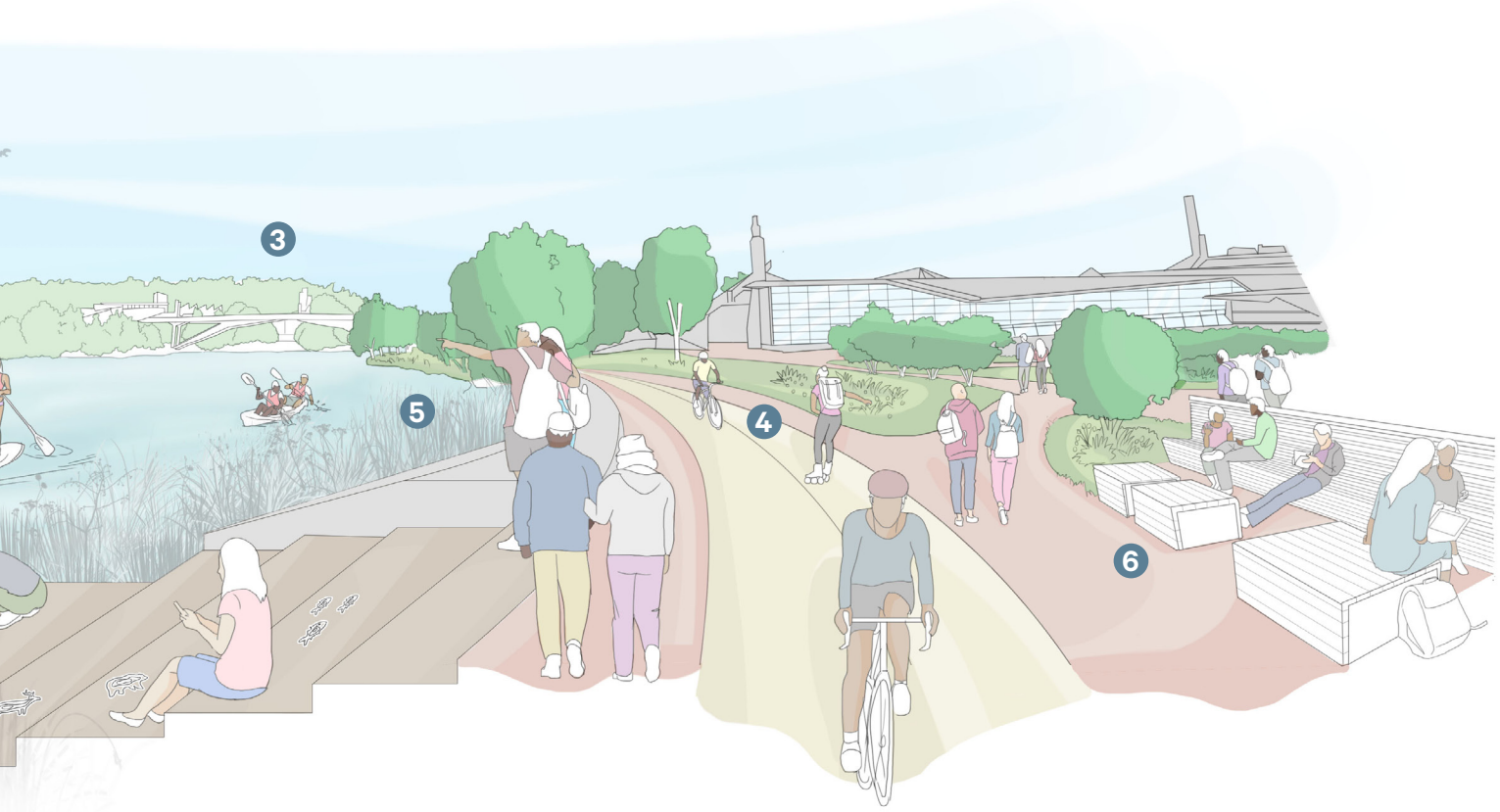
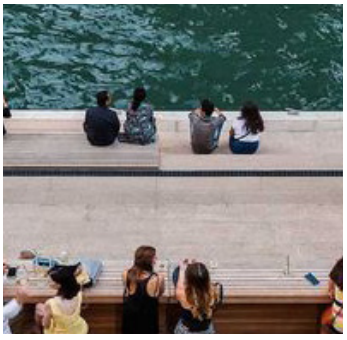


Figure 12: Vision for a Pedestrianized River's Edge

2 Places for public access to the river

Source: 3XN



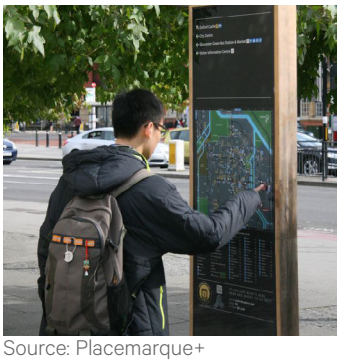
Source: Christian Phillips Photography

3 Safe links across the river to connect riverbanks

5 Naturalized and restored edge

6 Comprehensive signage and mapping

Source: Carlos Alejandro/ Jim Moffett



Source: Placemarque+